

## **Lecture 5. The purpose of transporting vehicles.**

**Purpose of the lecture:** to streamline the main means of mechanization of handling and storage operations for goods of various nomenclature and physical and mechanical properties based on kinematic parameters;

**Keywords:** transporters, feeders, scales, loading machines, bunkera, locks, batchers, gutters

**Types of lectures :** Lecture-explanation.

### **5.1. Purpose, scope and classification of transporters**

### **5.2. Conveyor systems**

#### **5.1. Purpose, scope and classification of transporters**

The main purpose of the transporting machines is the movement of goods along a given route. Simultaneously with the movement of goods, they can distribute them at predetermined points, store them, accumulating them in predetermined places, move them according to technological operations and provide the necessary rhythm of the production process. Sometimes the transportation process is combined with the basic technological operations (drying, sintering, cooling, etc.). A special group of transporting installations is constituted by auxiliary devices working together with them: feeders, scales, loading machines, bunkera, locks, batchers, gutters, etc.

High-performance work of a modern enterprise is impossible without properly organized and reliably working means of industrial transport. For example, at a machine-building plant, hundreds of tons of metal, fuel, semi-finished products and finished products of related industries are received and distributed in workshops, and finished products and production wastes are sent from workshops. Thousands tons of sinter, fluxes, coke are fed daily to blast furnaces of a metallurgical plant, and finished metal is transported from furnaces to other workshops and warehouses. Thousands of tons of mined coal and overburden are transported daily from a coal mine, open-cast mines.

Such transportation of goods at enterprises is carried out by means of industrial transport. Industrial transport is divided into external, internal (internal) and technological. External transport is designed to deliver raw materials, fuel, semi-finished goods, finished products from related industries and export of finished products and waste from the enterprise to the enterprise from the outside. These operations are performed by means of railway, automobile, less often water transport.

With the location of processing and energy enterprises characteristic of modern conditions near sources of raw materials (up to 10 ... 20 km) and large cargo flows (5 ... 25 million tons / year, or 1250 ... 6000 tons / h) for external transporting, they successfully use conveyors. Conveyor transport in these conditions is more economical than railway or automobile.

Internal (intra-factory) transport includes inter-workshop and intra-workshop transport. The inter-workshop transport is intended for the distribution of incoming goods across the enterprise and between the workshops (for example, between the supply and processing, mechanical and assembly) and warehouses. The inside shop serves for the transfer of goods inside the workshops between departments, internal warehouses, individual units of automatic lines and workplaces for

the production process, for the interoperational movement of goods during the flow method production. Operations of intra-workshop transportation at modern enterprises are carried out mainly by conveyors of various types and only at individual enterprises of mass production with small cargo flows use trolleys and hoisting cranes.

Technological transport is used where specialized rolling stock is required for transportation of goods with special properties between technological units: molten iron from a blast furnace shop to a steel mill, hot ingots from a steel mill to a rolling mill, and hot coke from coke batteries to a warehouse and etc.

## **5.2. Conveyor systems**

Conveyors in modern enterprises are used as:

- high-performance transporting cars transporting goods from one point to another in areas of intra-factory and, in some cases, external transport;
- transport units of powerful reloading devices (for example, axle loaders, dump dumpers, etc.) and loading and unloading machines;
- machines for moving goods - products according to the technological process of continuous production from one workplace to another;
- machines and transmission devices in technological automatic lines for the manufacture and processing of parts and assembly units of products.

Conveyor systems are a combination of conveyors of one or different types, loading and unloading and reloading devices, drives and automatic control devices. Depending on the purpose, they distinguish transport, distribution, sorting, storage and combined conveyor systems. The operation of the conveyor system can be controlled by computers in real time.

Belt conveyors are used for moving in a horizontal and half-inclined direction a variety of bulk and piece cargo, as well as for inter operational transportation of products in line production.

In scraper conveyors, the load is moved by drawing along the gutter or pipe of rectangular or circular cross-section by moving scrapers. The shape and height of the scraper are the main features by which scraper conveyors are divided into structural types.

### **Questions:**

1. Tell us about the purpose and classification of transporting machines.
2. Compare the applications of belt and plate conveyors.
3. How to determine the required drive power of the conveyor belt?

Literature and resources

1. Zhuravlev N.P., Malikov O.B. Transport and cargo complexes: Textbook. allowance. - M.: Route, 2016.-- 232 p.
2. Boyko N.I., Cherednichenko S.P. Transport and cargo systems and warehouses: textbook / N.I. Boyko, S.P. Cherednichenko. - Rostov n / a.: Phoenix, 2007.-- 400 p.
3. Transport and cargo systems. Textbook / A.S. Balalaev, I.A. Baburova, A. Yu. Kostenko. - Khabarovsk: Publishing house of FVGUPS, 2015.-- 101 p.

4. 4. Complex mechanization and automation of loading and unloading operations: Textbook / Ed. Timoshina A.A. and Machulsky I.I.-M .: Route, 2013.- 400 p.

**Internet resources:**

1. Abdikerimov, G.S. Logistic management of cargo transportation and terminal and warehouse activities [Text]: A textbook for specialists / G.S. Abdikerimov, S.Yu. Eliseev, V.M. Nikolashin, A.S. Sinitsyna, O.B. Malikov // M: FGBOU "Educational-methodical / center for education in railway transport". - 2013 .-- 428 p. <https://e.lanbook.com/reader/book/59016/#1>
2. Balalaev A.S., Leontiev R.G. Transport and logistics interaction in multimodal transportation: monograph. - M .: FGBOU "Educational-methodical center for education in railway transport", 2012. - 268 p. - <http://e.lanbook.com/view/book/58896/page58/>
3. Design of loading and unloading devices and warehouses: Method. instructions / compiled by V.A. Bolotin, E.K. Korovyakovsky, N.G. Yankovskaya.- SPb.: FSBEI HPE PGUPS, 2015.- 38 p.

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